

1

BITE BLOCK**CROSS-REFERENCE TO RELATED APPLICATION**

This application is a continuation of PCT Application Ser. No. PCT/US98/14476 filed on Jul. 13, 1998.

BACKGROUND OF THE INVENTION**1. Field of the Invention**

This invention relates to dentistry apparatus and, more particularly, it relates to mouth props for dental patients.

2. Description of the Related Art

Dental mouth props, or bite blocks, are devices which are inserted into the patient's mouth between the upper and lower teeth to keep the mouth opened in a fixed position while the dentist is working therein. In typical use, the teeth on one side of the mouth contact the bite block while the dentist is working on teeth on the opposite side. These bite blocks enhance the efficiency of the dentist so that the dentist does not have to continually remind the patient to keep the mouth open at a certain angle, and further so that the dentist does not have to be concerned with the patient inadvertently biting the dentist's hands. Patients typically find the props useful, as they are able to relax the muscles in the jaw as they rest their teeth on the prop.

Bite blocks are even more useful during long dental appointments when the patient's jaw muscles fatigue. The bite block allows the patient to relax the muscles and teeth on the block, which does the work in keeping the mouth open. Also, some patients cannot open their mouths to provide the dentist access because of damage to the jaw joint. These patients in particular require bite blocks even for short appointments.

Many different designs of bite blocks have been used or are otherwise known. However, known bite blocks are generally inconvenient to use and uncomfortable. Current designs are made of elastic material molded around a stiff metal frame, which allow for little to no variability in the opening angle. Such designs put stress on the mouths of patients who cannot open as wide as others. Current designs also deny access to assistants who evacuate oral fluids and tooth debris while the dentist prepares the tooth. Some examples of prior art bite blocks are shown in U.S. Pat. No. 3,722,101 issued to Via, Jr.; U.S. Pat. No. 500,959 issued to Osborn; and U.S. Pat. No. 5,421,327 issued to Flynn et al. The Via patent discloses a disposable, polygonal-shaped bite block made from a non-elastic foam material such as polyurethane, whereby the force of the teeth on the block causes the teeth to indent into the material and lock the block in place. The Via prop, however, consumes too much mouth space, and therefore competes with the space in which the dentist works. The Via prop is also invariable in size, which proves to be uncomfortable to some patients.

The Osborn patent describes a bite block formed of a pliable styrene material. While the Osborn patent improves access to the patient's mouth by providing a window in the block through which the dentist can insert tools, the block is somewhat complicated in construction and includes flanges extending from the top and bottom of the block on the cheek side to stabilize and keep the soft tissue of the cheeks away from the working area. This design still consumes too much work area despite the included window.

The bite blocks in both of the aforementioned patents are rigid in construction. The lack of flexibility in size of the bite block or adjustability of the particular patient's mouth

2

causes strain to the mouth when the dentist is accessing the patient's mouth. Moreover, the aforementioned props block access to the patient's mouth from at least one direction. The Osborn device provides a window for extending tools therethrough but this window is still comparably small and therefore limits the dentist's access to the open mouth therethrough.

SUMMARY OF THE INVENTION

In accordance with the invention, a bite block for facilitating a dentist's access to a patient's mouth comprises an open-ended, U-shaped body. A pair of arms extend from a bight portion of the U-shaped body, and thereby define a void that is bounded in part by the arms and the bight portion. The bight portion includes one or more strengthening ribs extending between the arms. Thus, when the bite block is positioned between upper and lower teeth of the patient's mouth, the dentist will have access to the patient's mouth through the void.

Preferably, the arms include a textured exterior surface which is adapted for aiding traction on the bite block by the upper and lower teeth. In another aspect of the invention, the textured exterior surface and the arms are made from polymer plastic having different durometers, and preferably, the plastic polymer of the textured exterior surface is a softer durometer than the polymer plastic of the arms. In a preferred embodiment, the polymer plastic of the textured exterior surface is santoprene, and the polymer plastic of the arms is polypropylene.

In another aspect of the invention, the textured exterior surface includes a series of serrations. Preferably, the series of serrations is longitudinally flanked by side walls disposed transversely to the serrations so that the upper and lower teeth are restrained on the bite block.

In a further aspect of the invention, the bite block will have strengthening ribs disposed on opposite outer edges of the bight portion.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described with reference to the drawings in which:

FIG. 1 is a perspective view of a bite block, according to the invention, in position between the lower and upper teeth of a patient's mouth;

FIG. 2 is an end view of the bite block of FIG. 1;

FIG. 3 is a sectional view of the bite block along line 3—3 of FIG. 1; and

FIG. 4 is a partial sectional view of the bite block along line 4—4 of FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIG. 1, a bite block 10 in accordance with the invention is generally U-shaped and includes a bight portion 12 from which extends a pair of arms 14 and 16, thereby partially defining a void 40. The bite block 10 is preferably made from a resilient thermoplastic polymer, such as polypropylene, having a durometer such that there is some flexibility in the bight portion 12, enabling it to act as a spring hinge while maintaining the bite block's unitary structure. The resilient material allows the patient to bite into the block 10 without discomfort and without destroying the block 10 while permitting the block 10 to flex at the bight portion 12.

The U-shape of the block 10 generally conforms to the preferred angle defined by the surfaces of the upper and